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10/045,416

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David J. Kunst

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09/16/2004

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EXAMINER

DEB, ANJAN K

ART UNIT

PAPER NUMBER

2858

DATE MAILED: 09/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/045,416

Applicant(s)

KUNST ET AL.

Examiner

Anjan K Deb

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20, 22-29 and 31-48 is/are pending in the application.
- 4a) Of the above claim(s) 32-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20, 22-29, 31 and 41-48 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This office action is in response to amendment and response filed 07/12/2004.

#### ***Specification***

2. The disclosure is objected to because of the following informalities: In specification page 13 line 29 “amplifier 342” should be —amplifier 344—as shown in drawing Fig. 4.

Appropriate correction is required.

#### ***Drawings***

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore “a measurable circuit element configured to compare the adjustable test current to a current through the measurable circuit element”, as stated in claim 1, is required to be shown in the drawings, or the feature(s) canceled from the claim(s). No new matter should be entered.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore “a comparison between the first and second voltage drops”, as stated in claims 11,23 is required to be shown in the drawings, or the feature(s) canceled from the claim(s). No new matter should be entered.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore “a comparison between the first sense

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voltage and the measured voltage”, as stated in claim 28 is required to be shown in the drawings, or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

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5. Claims 1,11,23,28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains following subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention:

In claim 1, “measurable circuit element configured to compare the adjustable test current to a current through the measurable circuit element”.

In claim 11, “comparison between the first and second voltage drops”.

In claim 23, “comparison between the second voltage drops and the first voltage drop”.

In claim 28, “comparison between the first sense voltage and the measured voltage”.

Claims 2-10, 12-20, 22-29, 31, 41-48 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement because they depend from the rejected base claims as indicated above.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-9, are rejected under 35 U.S.C. 102(b) as being anticipated by Johnson (US 5,059,916).

Re claim 1, (as best understood), Johnson discloses apparatus for determining a state of a measurable circuit element 14 having a plurality of states and a different impedance (variable resistance) in each state comprising a replicate circuit (35,34,32,33) configured to generate an adjustable test current and a trim determination circuit (36,14) coupled with the replication circuit for receiving the adjustable test current the trim determination circuit including the measurable circuit element 14 configured to compare ( $I_a - I_m$ ) the adjustable test current ( $I_a$ ) to a current through the measurable circuit element ( $I_m$ ) to indicate at least one of the states (resistance) of the measurable circuit element 14 (column 3 lines 50-64)(please see Fig. 5 shown below).

Re claim 2, Johnson discloses replicate circuit comprising resistors (33,34) having similar electrical characteristic (resistance) providing feedback 31 indicative of the amount of adjustable test current (Fig. 5).

Re claim 3, Johnson discloses circuit generates a test current ( $10x$ ) which is proportional to the adjustable test current ( $x$ ) whereby the test current ( $10x$ ) is passed through the measurable circuit element 14 such that a first voltage drop occurs across the measurable circuit element that is proportional to the impedance of the measurable circuit element.

Re claim 4, Johnson discloses measurable circuit element 14 has a lower voltage potential terminal whereby a voltage indicative of the state of the measurable circuit element 14 is measurable at the lower voltage potential terminal (-ve terminal of op-amp 38).

Re claim 5, Johnson discloses circuit has a scaled reference current source for generating a scaled reference current source 17 (V) and a dependent measurable current source 36 coupled with the scaled reference current source for generating a measured current (10x) whereby the amount of the measured current is a function of the first voltage drop across the measurable circuit element 14 and the state of the measurable circuit element is determined by the difference between the scaled reference current (produced by source V) and the measured current (10x).

Re claim 6, Johnson discloses replicate circuit including threshold current source 32 with feedback 31 for adjusting current.

Re claim 7, Johnson discloses trim circuit has a scaled current source (V) coupled to measurable current source (36).

Re claim 8, Johnson discloses all of the claimed limitations including first sense voltage (Vref) being supplied to second input (+) of amplifier 38 configured to generate an output proportional to the difference between measured voltage proportional to voltage across element 14 and a sense voltage (Vref).

Re claim 9, Johnson discloses replicate circuit having similar electrical characteristics (resistors) and adjustable test current (35,32,33,31).

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over by Audy (US 6,246,243 B1).

Re claim 1, Audy discloses apparatus for determining a state of a measurable circuit element (L1) having a plurality of states (intact, blown) and a different impedance in each state comprising a replicate circuit (Q3, Q5, Rth) configured to generate a test current and a trim determination circuit (Q4, Q6, LOGIC OUTPUT) coupled with the replication circuit for receiving the test current ( $i_{det}$ ) the trim determination circuit including the measurable circuit element (L1) configured to compare (column 4 lines 7-9) the adjustable test current to a current through the measurable circuit element to indicate (LOGIC OUTPUT) at least one of the states of the measurable circuit element (L1) (column 4 lines 22-24)(Fig. 2).

Audy did not expressly disclose generate an adjustable test current.

[Making Adjustable (see MPEP 2144.04: In re Stevens, 212 F.2d 197, 101 USPQ 284 (CCPA 1954) The court held that adjustability, where needed, is not a patentable advance.]

At the time of the invention it would have been obvious for one of ordinary skill in the art to modify Audy by adding adjustable test current so as to vary the test current flowing through transistor Q3, Q5 depending upon the particular characteristics of the device under test.



10. Claim 10, is rejected under 35 U.S.C. 103(a) as being unpatentable over Johnson (US 5,059,916) in view of Ozguc (US 6,130,541).

Re claim 10 Johnson discloses all of the claimed limitations as set forth above except second amplifier.

Ozguc in an analogous art for measuring the state of an element (capacitance) discloses a second amplifier (525) coupled to a replicate element ( $C_{INT}$ ) produces an output voltage which is used 526 for adjusting an adjustable test current ( $X_{k1}$ )(522) input to measurable element ( $C_L$ ) for accurately measuring the state of the element ( $C_L$ ) (Fig. 5).

At the time of the invention it would have been obvious for one of ordinary skill in the art to modify Johnson by adding a second amplifier disclosed by Ozguc for adjusting the level of test current input to a measurable element for accurately measuring the state of the element.

#### ***Pertinent Art***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Zabroda (US 6,343,024 B1) discloses circuit for determining the state of element  $R_L$  (impedance) comprising adjustable test current source (M1,M2), replicate element R2 and feedback (12,28) for adjusting the level of test current applied to element  $R_L$  (Fig. 1B)(Fig. 2A1).

Ueda (US 5,877,617) discloses circuit for determining state of an element 2 (load) comprising adjustable current source 3 for supplying current to element 2, adjustable current is

coupled to replicate circuit (sense) comprising adjustable current source 4 and feedback 6,7 for controlling the level of current applied to element 2 (Fig. 1).

### *Response to Arguments*

12. In response to applicant's arguments regarding rejection under 35 U.S.C. 102(b) of claims 1-9, that Johnson fails to teach a replicate circuit including a replicate circuit element configured to generate an adjustable test current indicative of one of the plurality of states, and that Johnson does not disclose generating an adjustable test current that is indicative of a state of a measurable device. Claims are given their broadest reasonable interpretation consistent with the supporting description (MPEP 2111). In the instant case, Johnson discloses a circuit (35,34,32,33) which is broadly interpreted as a replicate circuit configured to generate an adjustable test current ( $I_a$ )(illustrated by examiner in the Figure shown below) and a circuit (36,14) broadly interpreted as a trim determination circuit coupled with the replication circuit for receiving the adjustable test current, the trim determination circuit including the measurable circuit element 14, and utilizing the adjustable test current to indicate at least one of the states (resistance) of the measurable circuit element 14 (column 3 lines 50-64)(Fig. 5).

In response to applicant's arguments that Johnson further fails to disclose a trim determination circuit configured to compare the adjustable test current to a current through the measurable circuit element and indicate at least one of the states of the measurable circuit

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element. Applicant is referred to the Figure shown below wherein a trim determination circuit configured to compare the adjustable test current to a current through the measurable circuit element and indicating at least one of the states of the measurable circuit element is shown. As stated above the circuit (36,14) is broadly interpreted as the trim determination circuit which is coupled with the replication circuit (35,34,32,33) for receiving the adjustable test current ( $I_a$ ), and based upon a comparison of the adjustable test current ( $I_a$ ) to a current through the measurable circuit element ( $I_m$ ) a state of the measurable circuit element 14 is determined. The state of the measurable circuit element 14 would be determined by knowing its resistance as measured by the meter circuit 43 since the input signal ( $I_c$ ) to the inverting input (-) of Opamp 38 is a function of the current ( $I_m$ ) passed through the measurable circuit element 14 as determined from the following relation ( $I_c = I_a - I_m$ ). Therefore, Johnson discloses measurable circuit element 14 configured to compare ( $I_a - I_m$ ) the adjustable test current ( $I_a$ ) to a current through the measurable circuit element ( $I_m$ ).

13. In view of the above, the rejection of claim 10 under 35 U.S.C. 103(a) over Johnson in view of Ozguc is also maintained since Johnson discloses “a replicate circuit including a replicate circuit element configured to generate an adjustable test current indicative of one of the plurality of states”.

The essence of the instant invention is a trim determination circuit coupled with replication circuit for receiving an adjustable test current, configured to compare the adjustable test current to a current through the measurable circuit element so as to indicate at least one of

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the states of the measurable circuit element. The prior arts cited in this office action disclose this feature.

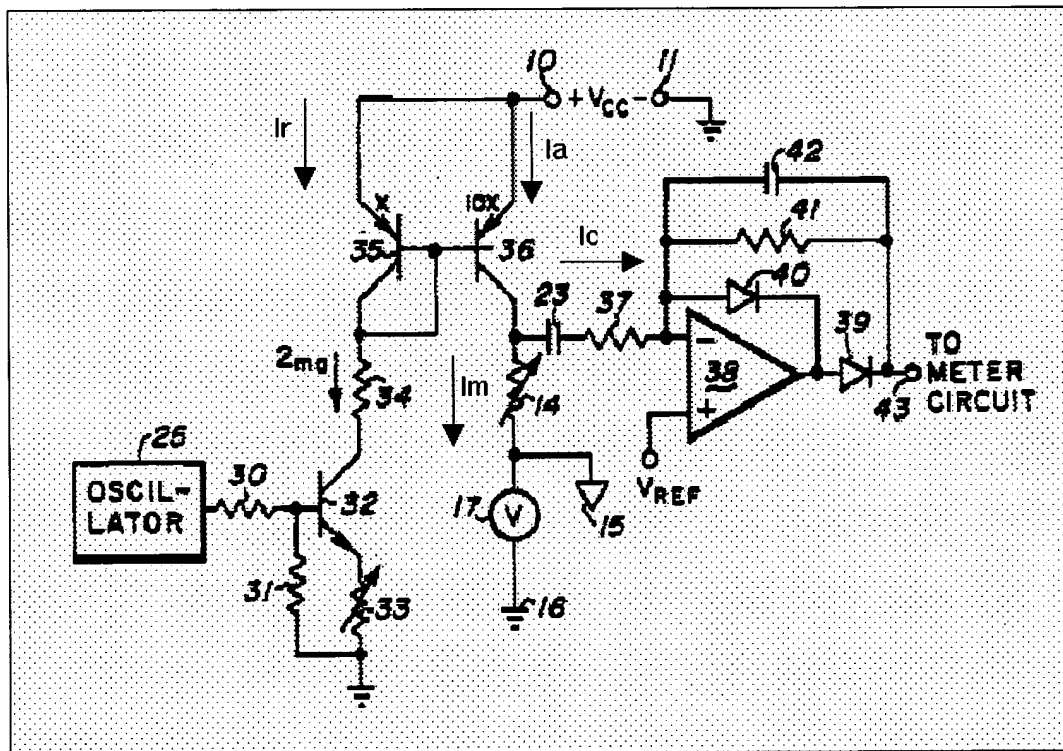


Fig. 5. (US 5,059,916) ( $I_r$ ,  $I_a$ ,  $I_c$  and corresponding arrows have been added by examiner for indicating current flow).

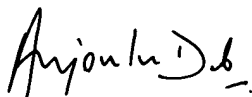
Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

***Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Anjan K. Deb whose telephone number is (703) 305-5219. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Le, can be reached at (703)-308-0750.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone numbers are (703)-308-0956 and (703)-305-4900.



**Anjan K. Deb**

Patent Examiner

Art Unit: 2858

9/14/04

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